

- Slide 1** Core Concepts of Technology Understanding
- Slide 2** Big Idea 3 Invention and innovation are driven by human needs and wants, and are influenced by the core concepts of technology: systems, resources, requirements, optimization and trade-offs, processes, and controls. These concepts are the cornerstone for creative design.
- Slide 3** Your journal should have these definitions written in this format.
- Slide 4** Systems A system is a group of interrelated components designed collectively to achieve a common goal. A system requires all components to function properly in order for the system to function. The human body and our electrical grid are examples of a system. If one part fails, all other parts are impacted, and may result in the failure of the entire system.
- Slide 5** Requirements Requirements are the “parameters” placed on the development of a product or system. These are the “must do” components of a design. Criteria identify the desired features of a product or system. Constraints involve the limitations of a design. We often say that we are working within certain parameters.
- Slide 6** Optimization / Trade-off Optimization involves making the product as functional as it can be, given the criteria and constraints. A trade-off involves a choice of one quality over another. An example would be making a product out of plastic (which would be cheaper) over using more expensive aluminum or other material
- Slide 7** Optimization / Trade-off Optimization involves making the product as functional as it can be, given the criteria and constraints. A trade-off involves a choice of one quality over another. An example would be making a product out of plastic (which would be cheaper) over using more expensive aluminum or other material
- Slide 8** Processes A process is a sequence of actions used to combine resources in order to produce an output. An example would be measuring ingredients, combining, and baking the mixture to make a cake
- Slide 9** Controls Controls are the mechanisms or activities that use information to cause systems to change. Controls may be manual (like the gas pedal in an automobile) or automatic (like the thermostat used to control the temperature of your home.) Controls are the essential ingredient in a “closed-loop” system.
- Slide 10** In this assignment, you are now asked to select one invention and one innovation, and discuss how the core concepts of Requirements and Controls were used to drive the designs. Below is an example.
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